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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/688,274	BRETHOUR ET AL.	
	Examiner	Art Unit	
	Muhammad Akbar	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-85* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-85* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments filed on 10/04/2007 have been entered. Claim(s)1, 29, 57 have been amended. Claim 85 has been added.

Response to Arguments

2. Applicant's arguments with respect to claim(s) 1, 29 and 57 have been considered but they are not persuasive.

Re claim 1, In response to the applicants arguments with respect to the amended claim 1 wherein added limitations and applicant argues on pages 15-16 that Sugar does not disclose at least the limitation of claim 1 which recites " ceasing transmission on a first set of bands wherein the first piconet ceases transmission by at least one of plurality of a device on first set of bands and the second piconet continues to utilize the first set of bands wherein at least the first set of bands is determined via coordination between the first piconet and the second piconet ." The examiner respectfully disagrees.

Reference Sugar et al discloses hold -off (i.e. ceasing) transmitting protocol signal (S_A of fig.10) (i.e. from first piconet Na) on first set of bands (i.e. common frequency of bands, see para[0007]) wherein first piconet (Na) hold off (i.e. ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of bands and Bluetooth enable second device (Nb) (i.e. second piconet) protocol signal (S_B of fig.10) can continue to use common frequency of bands (i.e. first set of frequency

bands) (see fig.1,7,10 and para [0007],[0055],[0058]). (since two frequency band are same and coexisting, and node Nb (second piconet) protocol signal (S_B of fig.10) can continue transmit to use first frequency band through frequency hop protocol).

Sugar et al further discloses multi-protocol wireless communication device (MPD) is operated to mitigate interference and to manage (i.e. coordinate) communication of two or more network operating with the same communication protocol in the same frequency band (first set of bands) ,particularly where a characteristics of the protocol 9frequency hopping) necessitates collision avoidances procedures to optimize throughput of the networks (see fig.13,23 and para[0034],[0039],[0085],[0134]).

(it is obvious that the managing (i.e. coordinating) of communication protocol (S_A ,S_B of fig.10) between two piconets devices for using same frequency bands must needed coordination to avoids collision as well as mitigate interferences, and Sugar et al fig.7 and 23 describes when and how disable transmission and applicant's disclosure para [0096]).

However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15) and piconet (280) and second piconet (290) are associated with plurality of devices and using first frequency band (see fig.1, device 160,170,180,190,200,210, col. 5 lines 14-25).

Shellhammer further teaches to determine the same frequency bands between two piconet devices coordination schemes is applied to dormant the transmission (see fig.3 and col.3 lines 33-52,col.6 lines 16-44).

Therefore, references teach all the limitation of claim 1, 14, 29, 42, 57, 70 as discussed above, accordingly the rejection is maintained.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the teaching, suggestion, or motivation was found in the references themselves and in the knowledge generally available to one of ordinary skill in the art. As stated herein, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and determine same frequency band by applied coordination technique (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices as well as improve dropping of transmission packets (see col.7 lines 6-19) in a piconet

communication protocol. Therefore, motivation of combining found in the prior arts and rejection is maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugar et al (U.S. Pub. No. 2002/0061031 A1) and in view of Shellhammer et al (U.S. Patent No. 7,039,358 B1).

Re claim 1, Sugar discloses a method comprising mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 and para[0108], [0042],[0066]) including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]); and

hold -off (i.e. ceasing) transmitting protocol signal (S_A of fig.10) (i.e. from first piconet Na) on first set of bands (i.e. common frequency of bands, see para[0007]) wherein first piconet (Na) hold off (i.e. ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of bands and Bluetooth enable second

device (Nb) (i.e. second piconet) protocol signal (S_B of fig.10) can continue to use common frequency of bands (i.e. first set of frequency bands) (see fig.1,7,10 and para [0007],[0055],[0058]). (since two frequency band are same and coexisting and node Nb (second piconet) protocol signal (S_B of fig.10) can continue transmit to use first frequency band through frequency hop protocol).

Sugar et al further discloses multi-protocol wireless communication device (MPD) is operated to mitigate interference and to manage (i.e. coordinate) communication of two or more network operating with the same communication protocol in the same frequency band (first set of bands) ,particularly where a characteristics of the protocol (frequency hopping) necessitates collision avoidances procedures to optimize throughput of the networks (see fig.13,23 and para[0034],[0039],[0085],[0134]).

(it is an obvious that the managing (i.e. coordinating) of communication protocol (S_A ,S_B of fig.10) between two piconets devices for using same frequency bands must needed coordination to avoids collision as well as mitigate interferences, and Sugar et al fig.7 and 23 describes when and how disable transmission and applicant's disclosure para [0096]).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15) and piconet (280)

and second piconet (290) are associated with plurality of devices and using first frequency band (see fig.1, device 160,170,180,190,200,210, col. 5 lines 14-25).

Shellhammer further teaches to determine the same frequency bands between two piconet devices coordination schemes is applied to dormant the transmission (see fig.3 and col.3 lines 33-52,col.6 lines 16-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices as well as improve dropping of transmission packets (see col.7 lines 6-19) in a piconet communication protocol.

Re claim 2, as discussed above with respect to claim1, Sugar further discloses hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency

band through frequency hop protocol, para[0066])

Re claim 3, as discussed above with respect to claim 1, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 4, as discussed above with respect to claim 3, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 5, as discussed above with respect to claim 4, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 6, as discussed above with respect to claim 1, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 7, as discussed above with respect to claim 6, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is

detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 8,9,10, as discussed above with respect to claim 1, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 11,12,13, as discussed above with respect to claim 1, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 14, Sugar discloses a method comprising mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device

16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]);communicating between the first piconet (Na) and the second piconet (Nb) by using first protocol and second protocol through multiple device protocol with WLAN wherein the communication includes establishing a first set of bands and a second set of bands (see fig.1,3,4 and para [007]) (since WLAN protocol have two or more frequency hopping communication protocol coexisting with one or more same frequency band); and hold -off (ceasing) transmitting protocol signal A (from first piconet Na) on first set band wherein and first piconet (Na) hold off (ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of band and Bluetooth enable device Nb i.e. second piconet can continue to use first set of frequency band (see fig.1,7 and para [0007],[0058]) (since two frequency band are same and coexisting and node Nb (second piconet) can continue transmit to use first frequency band through frequency hop protocol).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15); and Shellhammer

further teaches piconet (280) and second piconet (290) are associated with plurality of devices (see fig.1, device 160,170,180,190,200,210) and using same frequency band which is comprises two or more frequency sub bands (col.3 lines 25-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices in a piconet communication protocol.

Re claim 15 , as discussed above with respect to claim 14, Sugar further discloses hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol, para[0066])

Re claim 16, as discussed above with respect to claim 14, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 17,18, as discussed above with respect to claim 14, Sugar furthermore teaches first piconet (Na) keeping an activity record i.e. history with PMD (PMD has processor, controller wherein keep record of the ACK message, transmitting protocol and duration of frequency hopping) and first set of band is used in the first piconet (Na) (see fig.2,7 and para [007],[0094]) (first piconet used first frequency band and need waits one short interference space period from the end of the transmitting message, thus first piconet need keep tracking history of frequency band)

Re claim19, as discussed above with respect to claim 18, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 20, as discussed above with respect to claim 19, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 21, as discussed above with respect to claim 14, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 22, as discussed above with respect to claim 21, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 23,24,25, as discussed above with respect to claim 14, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 26,27,28, as discussed above with respect to claim 14, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and

processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 29, Sugar discloses Bluetooth enable wireless communication comprises processor which can be configured or programmed to perform software instruction for mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) and steps including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]); and

hold -off (i.e. ceasing) transmitting protocol signal (S_A of fig.10) (i.e. from first piconet Na) on first set of bands (i.e. common frequency of bands, see para[0007]) wherein first piconet (Na) hold off (i.e. ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of bands and Bluetooth enable second device (Nb) (i.e. second piconet) protocol signal (S_B of fig.10) can continue to use

common frequency of bands (i.e.first set of frequency bands) (see fig.1,7,10 and para [0007],[0055],[0058]).

(since two frequency band are same and coexisting and node Nb (second piconet) protocol signal (S_B of fig.10) can continue transmit to use first frequency band through frequency hop protocol).

Sugar et al further discloses multi-protocol wireless communication device(MPD) is operated to mitigate interference and to manage (i.e. coordinate) communication of two or more network operating with the same communication protocol in the same frequency band (first set of bands) ,particularly where a characteristics of the protocol (frequency hopping) necessitates collision avoidances procedures to optimize throughput of the networks (see fig.13,23 and para[0034],[0039],[0085],[0134]).

(it is an obvious that the managing (i.e. coordinating) of communication protocol (S_A ,S_B of fig.10) between two piconets devices for using same frequency bands must needed coordination to avoids collision as well as mitigate interferences, and Sugar et al fig.7 and 23 describes when and how disable transmission and applicant's disclosure para [0096]).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15) and piconet (280)

and second piconet (290) are associated with plurality of devices and using first frequency band (see fig.1, device 160,170,180,190,200,210, col. 5 lines 14-25).

Shellhammer further teaches to determine the same frequency bands between two piconet devices coordination schemes is applied to dormant the transmission (see fig.3 and col.3 lines 33-52,col.6 lines 16-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices as well as improve dropping of transmission packets (see col.7 lines 6-19) in a piconet communication protocol.

Re claim 30, as discussed above with respect to claim 29, Sugar further discloses the hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency

band through frequency hop protocol, para[0066])

Re claim 31, as discussed above with respect to claim 29, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 32, as discussed above with respect to claim 31, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 33, as discussed above with respect to claim 32, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 34, as discussed above with respect to claim 29, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 35, as discussed above with respect to claim 34, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 36,37,38, as discussed above with respect to claim 29, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 39,40,41, as discussed above with respect to claim 29, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 42, Sugar discloses Bluetooth enable wireless communication comprises processor which can be configured or programmed to perform software instruction for mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) and steps including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]);communicating between the first piconet (Na) and the second piconet (Nb) by using first protocol and second protocol through multiple device protocol with WLAN wherein the communication includes establishing a first set of bands and a second set of bands (see fig.1,3,4 and para [007]) (since WLAN protocol have two or more frequency hopping communication protocol coexisting with one or more same frequency band); and hold -off (ceasing) transmitting protocol signal A (from first piconet Na) on first set band wherein and first piconet (Na) hold off (ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of band and Bluetooth enable device Nb i.e. second piconet can continue to use first set of frequency band (see fig.1,7 and para [0007],[0058]) (since two frequency band are same and coexisting and node Nb (second piconet) can continue transmit to use first frequency band through frequency hop protocol).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15); and Shellhammer further teaches piconet (280) and second piconet (290) are associated with plurality of devices (see fig.1, device 160,170,180,190,200,210) and using same frequency band which is comprises two or more frequency sub bands (col.3 lines 25-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices in a piconet communication protocol.

Re claim 43, as discussed above with respect to claim 42, Sugar further discloses hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency

hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol, para[0066])

Re claim 44, as discussed above with respect to claim 42, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 45,46, as discussed above with respect to claim 42, Sugar furthermore teaches first piconet (Na) keeping an activity record i.e. history with PMD (PMD has processor, controller wherein keep record of the ACK message, transmitting protocol and duration of frequency hopping) and first set of band is used in the first piconet (Na) (see fig.2,7 and para [007],[0094]) (first piconet used first frequency band and need waits one short interference space period from the end of the transmitting message, thus first piconet need keep tracking history of frequency band)

Re claim 47, as discussed above with respect to claim 46, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 48, as discussed above with respect to claim 47, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 49, as discussed above with respect to claim 42, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 50, as discussed above with respect to claim 49, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 51,52,53, as discussed above with respect to claim 42, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the

evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 54,55,56, as discussed above with respect to claim 42, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 57, Sugar discloses an apparatus (see fig.1) comprising: mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) ;

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]);

and hold -off (ceasing) transmitting protocol signal A (from first piconet Na) on first set band wherein and first piconet (Na) hold off (ceases) transmission by at least

one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of band (see para [007]) and continue to use second set of frequency band (see fig.1,7 and para 0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol, para[0066]).

Sugar et al further discloses multi-protocol wireless communication device(MPD) is operated to mitigate interference and to manage (i.e. coordinate) communication of two or more network operating with the same communication protocol in the same frequency band (first set of bands) ,particularly where a characteristics of the protocol (frequency hopping) necessitates collision avoidances procedures to optimize throughput of the networks (see fig.13,23 and para[0034],[0039],[0085],[0134]).

(it is an obvious that the managing (i.e. coordinating) of communication protocol (S_A ,S_B of fig.10) between two piconets devices for using same frequency bands must needed coordination to avoids collision as well as mitigate interferences, and Sugar et al fig.7 and 23 describes when and how disable transmission and applicant's disclosure para [0096]).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet

(280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15) and piconet (280) and second piconet (290) are associated with plurality of devices and using first frequency band (see fig.1, device 160,170,180,190,200,210, col. 5 lines 14-25).

Shellhammer further teaches to determine the same frequency bands between two piconet devices coordination schemes is applied to dormant the transmission (see fig.3 and col.3 lines 33-52,col.6 lines 16-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices as well as improve dropping of transmission packets (see col.7 lines 6-19) in a piconet communication protocol.

Re claim 58, as discussed above with respect to claim 57, Sugar further discloses hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency

band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol, para[0066])

Re claim 59, as discussed above with respect to claim 57, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 60, as discussed above with respect to claim 59, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 61, as discussed above with respect to claim 60, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 62, as discussed above with respect to claim 57, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 63, as discussed above with respect to claim 62, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 64,65,66, as discussed above with respect to claim 57, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 67,68,69, as discussed above with respect to claim 57, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 70, Sugar discloses an apparatus comprising a first piconet (Na) mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]);and hold -off (ceasing) transmitting protocol signal A (from first piconet Na) on first set band wherein and first piconet (Na) hold off (ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of band and Bluetooth enable device Nb i.e. second piconet can continue to use first set of frequency band (see fig.1,7 and para [0007],[0058]) (since two frequency band are same and coexisting and node Nb (second piconet) can continue transmit to use first frequency band through frequency hop protocol).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15); and Shellhammer further teaches piconet (280) and second piconet (290) are associated with plurality of

devices (see fig.1, device 160,170,180,190,200,210) and using same frequency band which is comprises two or more frequency sub bands (col.3 lines 25-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices in a piconet communication protocol.

Re claim 71, as discussed above with respect to claim 70, Sugar further discloses hold -off (ceasing) transmitting protocol signal B (from Bluetooth enable piconet Nb) wherein Bluetooth enable piconet Nb (i.e. second piconet) hold off (ceases) transmission by at least one of another plurality of devices (Nb is consisting Bluetooth enable device 16 and 20 see fig. 1 and para[0042]) on a second set of band (para [007]) and first piconet Na continue to use second set of frequency band (see fig.1,7 and para [0007],[0056],[0058]) (since Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol, para[0066])

Re claim 72, as discussed above with respect to claim 70, Sugar further discloses stopped (ceasing) transmission on the first set of bands is done for a short

duration which is pre identified by DURID i.e. predetermined time period (see fig.15 and para [0086],[0091])

Re claim 73,74, as discussed above with respect to claim 70, Sugar furthermore teaches first piconet (Na) keeping an activity record i.e. history with PMD (PMD has processor, controller wherein keep record of the ACK message, transmitting protocol and duration of frequency hopping) and first set of band is used in the first piconet (Na) (see fig.2,7 and para [007],[0094]) (first piconet used first frequency band and need waits one short interference space period from the end of the transmitting message, thus first piconet need keep tracking history of frequency band)

Re claim 75, as discussed above with respect to claim 74, Sugar further discloses the first set of bands (Sa) and the second set of bands (Sb) are substantially orthogonal (see fig.4).

Re claim 76, as discussed above with respect to claim 75, Sugar further discloses the first set of bands and the second sets of bands substantially encompass a time division duplex format i.e. time coded frequency spectrum (see fig. 5A and para [0050]).

Re claim 77, as discussed above with respect to claim 70, Sugar further discloses monitoring the first set of bands for activity (measure network load, slot duration, activity of bands), wherein the first set of bands is monitored by the multiple

protocol device (MPD) with Bluetooth enable device Na i.e. first piconet (see para [0142])

Re claim 78, as discussed above with respect to claim 77, Sugar further discloses transmit again (i.e. resuming transmission) by at least one of the plurality of devices (Na and Nb) on one or more of the sub bands in the first set of bands when network is detected idle (i.e. no activity) on one or more bands within the first set of bands (see fig.7,8 para[0094];[0095]).

Re claim(s) 79,80,81, as discussed above with respect to claim 70, Sugar further discloses detecting interference includes evaluating an bit error rate (see fig.2 and para[0059]); and bit error rate and the evaluation is done at the physical layer (see fig.2 item 180-184 and para [0073]); and bit error rate is a packet error rate and the evaluation is done at the medium access control layer(MAC)(see fig.2 and para[0084]) (IEEE 802.11 protocol and WLAN are medium access control layer)

Re claim(s) 82,83,84, as discussed above with respect to claim 70, Sugar furthermore teaches attempting to mitigate interference through the use of time division multiple access when interference is detected (see fig. 2 and para [0067]); and processing further (like modulating, converting interference signal) i.e. characterizing interference upon interference is detected by the detector (120 of fig.2); and sugar further teaches process of the interference signal i.e. characterizing includes channel assessment is done by the physical layer (see fig.2 and para[0073]).

Re claim 85, Sugar discloses a method comprising: mitigating interference between piconets (Bluetooth enable multiple protocol device (PMD) communicate with node Na (which includes Bluetooth enable device 14 and 22 using first protocol) i.e. first piconet and PMD communicate with node Nb (which includes Bluetooth enable device 16 and 20 using second protocol) i.e. second piconet (see title, fig.1,7 ,para[0108], [0042],[0066]) including:

detecting interference between Bluetooth enable communication device i.e. first piconet (Na) and second piconet (Nb) by the detector (297 of fig.12A) of MPD (see fig.1,2 and para[0080],[0088]); and

hold -off (i.e. ceasing) transmitting protocol signal (S_A of fig.10) (i.e. from first piconet Na) on first set of bands (i.e. common frequency of bands, see para[0007]) wherein first piconet (Na) hold off (i.e. ceases) transmission by at least one of a plurality of devices with multiple protocol device (MPD) (since Na is comprises with two device 14 and 22, see fig. 1,7) on first set of bands and Bluetooth enable second device (Nb) (i.e. second piconet) protocol signal (S_B of fig.10) can continue to use common frequency of bands (i.e.first set of frequency bands) (see fig.1,7,10 and para [0007],[0055],[0058]).

Sugar et al further discloses Bluetooth WLAN network operating one or more frequency hoping communication protocol with co-existing same frequency band i.e. two frequency band are same and Nb (second piconet) can continue transmit to use second frequency band through frequency hop protocol (see para[0066]) and

frequency band can be determined by the sharing responsibility (i.e. exchanging) method to avoid collision or mitigation interference (see fig.2 and para[0046],[0128]).

But Sugar does not disclose explicitly forming two piconet associated with plurality of device. However, Shellhammer teaches techniques for frequency coordination between two Bluetooth enable IEEE 802.11 network protocol (same field of endeavor) wherein reducing (mitigating) and detecting interference between piconet (280) and piconet (290) (see fig.1, col.4 lines 29-34,col.7 lines 10-15) and piconet (280) and second piconet (290) are associated with plurality of devices and using first frequency band (see fig.1, device 160,170,180,190,200,210, col. 5 lines 14-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mitigating and detecting interference between piconets and hold off transmission one of the device (as taught by Sugar) by incorporating piconet (280 and 290) with multiple devices and used same frequency band (as taught by Shellhammer) to improve reducing interference between Bluetooth enable multiple devices as well as improve dropping of transmission packets (see col.7 lines 6-19) in a piconet communication protocol.

Conclusion

7. The amendment necessitated the new ground(s) of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muhammad Akbar whose telephone number is (571)-270-1218. The examiner can normally be reached on Monday- Thursday (8:30 A.M.-6:00P.M).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MA

12-26-07

LANA LE
PRIMARY EXAMINER